



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/605,044	06/27/2000	David Black	E0295/7117(MBL)	4788

7590

11/25/2005

Matthew B Lowrie
Wolf Greenfield & Sacks P C
Federal Reserve Plaza
600 Atlantic Avenue
Boston, MA 02210-2211

EXAMINER

ANDERSON, MATTHEW D

ART UNIT

PAPER NUMBER

2186

DATE MAILED: 11/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/605,044

Applicant(s)

BLACK, DAVID

Examiner

Matthew D. Anderson

Art Unit

2186

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 28-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 and 37-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. In response to the amendment filed 11/14/05: claims 1, ,12, 13, 16, and 22 have been amended.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5, 7, 9, 11-27, and 37-39 are rejected under 35 U.S.C. 102(e) as anticipated by Fisher *et al.* (US Patent # 6,247,096) or, in the alternative, under 35 U.S.C. 103(a) as obvious over Fisher *et al.* and DiChiara *et al.* (US Patent # 4,858,117).

4. With respect to claim 1, Fisher *et al.* disclose:

a computer storage system comprising a plurality of storage elements coupled together with a communication network, as shown in figure 2;

for each of a plurality of logical volumes, maintaining identifying information for each user of the respective logical volume, as shown by the logical volume status tables in figures 5 and 6, and in column 5, lines 1-7;

wherein the respective logical volume may have multiple users, as shown by the multiple hosts in figure 2, and the owner information in column 5, lines 1-7;

for each of the plurality of logical volumes, verifying that the logical volume is still in use by using at least a portion of the identifying information., as shown by the mounted/non-mounted status of each volume in figure 5.

Fisher discloses in figure 5 and 6, and also column 4, lines 60+, of numerous databases maintaining identifying information for the storage volumes of its system. The Examiner is interpreting the entirety of the information from these databases as the claimed identifying information which indicates in use status (mount status) and user (owner info).

5. With respect to claims 16 and 22, Fisher *et al.* disclose:

a storage medium to store logical volumes, as shown in figure 3;

an access manager module configured to maintain identifying information for each user of the logical volumes storage of the storage medium, as shown by the logical volume status tables in figures 5 and 6;

a verifier module coupled to the access manager module, to perform verification that a logical volume is still in use by using at least a portion of the identifying information., as shown by the mounted/non-mounted status of each volume in figure 5.

6. With respect to claim 2, Fisher *et al.* disclose the verifying step comprising a step of performing verification for each of the logical volumes stored in the computer storage system as a discrete, continuous process, by teaching in column 5, lines 9-15, The data storage system administration program maintains (in the tape configuration database 40) a system volume catalog of the volumes by VOLSER and having other data relating to the volumes. Each logical volume appears as an addressable data storing volume to the host processor 30 that is mountable in one of the virtual drives 15 in the library.

7. With respect to claim 3, Fisher *et al.* disclose the verifying step comprising a step of performing verification for each of the plurality of logical volumes located on one of the storage elements as a discrete, continuous process, by teaching in column 5, lines 9-15, The data storage system administration program maintains (in the tape configuration database 40) a system volume catalog of the volumes by VOLSER and having other data relating to the volumes. Each logical volume appears as an addressable data storing volume to the host processor 30 that is mountable in one of the virtual drives 15 in the library.
8. With respect to claim 4, Fisher *et al.* disclose the verifying step comprising a step of performing verification for each of the logical volumes accessed by one of the users, coupled to the communications network as a discrete, continuous process, by teaching in column 5, lines 9-15, The data storage system administration program maintains (in the tape configuration database 40) a system volume catalog of the volumes by VOLSER and having other data relating to the volumes. Each logical volume appears as an addressable data storing volume to the host processor 30 that is mountable in one of the virtual drives 15 in the library.
9. With respect to claim 5, Fisher *et al.* disclose at least one of the users is a host computer, as shown by item 30 in figure 2.
10. With respect to claim 7, Fisher *et al.* disclose at least one of the users is an application running on a host computer, as taught by the computer readable program code of a computer program product in column 5, lines 49-51.
11. With respect to claim 9, Fisher *et al.* disclose the logical volume to be a component of a conventional logical volume, as shown in figure 3.

Art Unit: 2186

12. With respect to claim 11, Fisher *et al.* disclose the step of maintain to be performed by a storage management console computer, as shown by the terminal computer 28 in figure 2.

13. With respect to claim 12, Fisher *et al.* disclose the step of maintain comprising a step of maintaining identifying information for each user of the respect logical volume on the respective storage element on which the logical volume is stored, as shown by the logical volume status tables in figures 5 and 6.

14. With respect to claim 13, Fisher *et al.* disclose the step of maintaining comprising a step of maintain identifying information for each user of the respective logical volume on a storage management console computer, as shown by the terminal computer 28 connected to the library manager 24 in figure 2.

15. With respect to claim 14, Fisher *et al.* disclose assigning an ELVID to each logical volume, as taught by the logical volume serial number (VOLSER) in column 4, lines 50-55.

16. With respect to claims 15, 19, and 26, Fisher *et al.* disclose identifying at least one of a plurality of host computers, the identified host computers having accessed one of the logical volumes, and querying each of the identified host computers about whether the logical volume is still in use, by teaching in column 5, lines 25-45, that a host system tape management system will expire the data in a logical volume when it is superseded by subsequent data, or upon an administrator providing a command indicating that the data is no longer needed. The host system will then place the logical volume in "scratch" category located in the data storage subsystem 10. If the host system has no immediate need to replace the expired data with new data sets, it would be advantageous for the host system to "eject" the logical volume, and delete the expired logical volume from its databases 40 and 41, reducing the size of the databases.

Art Unit: 2186

However, as described above, because of the fact that the logical volume is tracked by databases in the host system, by the virtual media server database and by the library manager database, and there is no ability by the library manager 24 to determine whether the logical volume is clearly inactive to any host system, any attempt by a host system to eject the logical volume is currently rejected by the library manager. Thus, even though no active data is contained in the logical volume, it remains in the databases.

17. With respect to claims 17 and 23, Fisher *et al.* disclose a verification initiator to initiate verification, by teaching in steps 92 and 98 of figure 8 of the library manager determining the category and status of the logical volume.

18. With respect to claims 18 and 24, Fisher *et al.* disclose the verifier module including a time tracker to identify when a logical volume has not been accessed for an identified period of time, as taught by the volume expiration in column 5, lines 5.

19. With respect to claims 20 and 26, Fisher *et al.* disclose an ELVID database module, as shown by the management database 41 in figure 2.

20. With respect to claims 21 and 27, Fisher *et al.* disclose an ELVID verification module, as shown by the library manager database 38 in figure 2.

21. With respect to the independent claims and claims 37-39, Fisher et al. teach all other limitations, as discussed above, but fail to specifically disclose the logical volume having multiple users simultaneously. DiChiara et al. disclose in column 7, lines 18+, that the operating system maintains an access control list for each storage device that defines which users have access to the device.

Art Unit: 2186

22. It would have been obvious to one of ordinary skill in the art, having the teachings of Fisher *et al.* and DiChiara *et al.* before him at the time the invention was made, to modify the multiple host storage system taught by Fisher *et al.*, to include a list of multiple simultaneous users of a storage device, as with the storage system of DiChiara *et al.*, in order to prevent unauthorized access by another user, as taught by DiChiara *et al.*.

23. Claims 1-5, 7, 9, 11-27, and 37-39 are rejected under 35 U.S.C. 102(e) as anticipated by Fisher *et al.* (US Patent # 6,247,096) or, in the alternative, under 35 U.S.C. 103(a) as obvious over Fisher *et al.* and Hart (US Patent # 5,285,528).

24. With respect to the independent claims and claims 37-39, Fisher *et al.* teach all other limitations, as discussed above, but may fail to specifically disclose the logical volume having multiple users simultaneously and verifying the use of the logical volumes by using the identifying information. Hart discloses in column 18, lines 27+, a list of plural owners sharing access to a memory including lock bits for particular users to prevent deadlocks.

25. It would have been obvious to one of ordinary skill in the art, having the teachings of Fisher *et al.* and Hart before him at the time the invention was made, to modify the multiple host storage system taught by Fisher *et al.*, to include a list of multiple simultaneous users of a storage device, as with the storage system of Hart, in order to prevent unauthorized access by another user, as taught by Hart.

26. Claims 1-5, 7-27, and 37-39 are rejected under 35 U.S.C. 102(e) as anticipated by Fisher *et al.* (US Patent # 6,247,096) or, in the alternative, under 35 U.S.C. 103(a) as obvious over Fisher *et al.* and Duso *et al.* (US Patent # 5,892,915).

27. With respect to the independent claims and claims 37-39, Fisher *et al.* teach all other limitations, as discussed above, but may fail to specifically disclose the logical volume having multiple users simultaneously and verifying the use of the logical volumes by using the identifying information. Duso *et al.* discloses an Active Client List 301 in figure 27, which is a list of all active (in use) clients with their current play position.

28. With respect to claim 8, Fisher *et al.* disclose all other limitations of the parent claim, as discussed above, but does not specifically disclose the logical volume to be a hyper-volume. Duso *et al.* teach such in figure 27, and the corresponding sections of the specification.

29. With respect to claim 10, Fisher *et al.* disclose all other limitations of the parent claim, as discussed above, but does not specifically disclose the logical volume to be a partition. Duso *et al.* teach such in figure 21, and the corresponding sections of the specification.

30. It would have been obvious to one of ordinary skill in the art, having the teachings of Fisher *et al.* and Duso *et al.* before him at the time the invention was made, to modify the logical volume system taught by Fisher *et al.*, to include multiple users, hypervolumes, and partitioning, as with the logical volume system of Duso *et al.*, in order to restrict access of hosts to certain portions of the data storage area, as taught by Duso *et al.*.

31. Claims 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher *et al.*, and DiChiara *et al.* or Hart, and Duso *et al.*.

Art Unit: 2186

32. With respect to claim 8, Fisher *et al.* disclose all other limitations of the parent claim, as discussed above, but does not specifically disclose the logical volume to be a hyper-volume.

Duso *et al.* teach such in column 42, lines 30-33

33. With respect to claim 10, Fisher *et al.* disclose all other limitations of the parent claim, as discussed above, but does not specifically disclose the logical volume to be a partition. Duso *et al.* teach such in column 21, lines 32-33.

34. It would have been obvious to one of ordinary skill in the art, having the teachings of Fisher *et al.*, DiChiara *et al.* or Hart, and Duso *et al.* before him at the time the invention was made, to modify the logical volume system taught by Fisher *et al.* and DiChiara *et al.* or Hart, to include user accounts, hypervolumes, and partitioning, as with the logical volume system of Duso *et al.*, in order to restrict access of hosts to portions of the data storage area, as taught by Duso *et al.* in column 2, lines 18-25.

35. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher *et al.* and Wang (US Patent # 5,7558,345).

36. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher *et al.*, and Duso *et al.*, and Wang (US Patent # 5,7558,345).

37. With respect to claim 6, Fisher *et al.* disclose all other limitations of the parent claim, as discussed above, but does not specifically disclose at least one of the users is an account of a host computer. Wang teaches a database administrator account for the logical volumes in column 7, lines 20+.

Art Unit: 2186

38. It would have been obvious to one of ordinary skill in the art, having the teachings of Fisher *et al.*, Duso *et al.*, and Wang. before him at the time the invention was made, to modify the logical volume system taught by Fisher *et al.* and Duso *et al.*, to include a host user account, as with the logical volume system of Wang, in order to provide administrative control to the logical volume, as taught by Wang.

39. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher *et al.*, DiChiara *et al.*, and Wang.

40. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher *et al.*, Duso *et al.*, DiChiara *et al.*, and Wang.

41. With respect to claim 6, Fisher *et al.* disclose all other limitations of the parent claim, as discussed above, but does not specifically disclose at least one of the users is an account of a host computer. Wang teaches a database administrator account for the logical volumes in column 7, lines 20+.

42. It would have been obvious to one of ordinary skill in the art, having the teachings of Fisher *et al.*, Duso *et al.*, DiChiara *et al.*, and Wang. before him at the time the invention was made, to modify the logical volume system taught by Fisher *et al.*, Duso *et al.*, and DiChiara *et al.*, to include a host user account, as with the logical volume system of Wang, in order to provide administrative control to the logical volume, as taught by Wang.

43. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher *et al.*, Duso *et al.*, Hart, and Wang.

Art Unit: 2186

44. With respect to claim 6, Fisher *et al.* disclose all other limitations of the parent claim, as discussed above, but does not specifically disclose at least one of the users is an account of a host computer. Wang teaches a database administrator account for the logical volumes in column 7, lines 20+.

45. It would have been obvious to one of ordinary skill in the art, having the teachings of Fisher *et al.*, Duso *et al.*, Hart, and Wang. before him at the time the invention was made, to modify the logical volume system taught by Fisher *et al.*, Duso *et al.*, and Hart, to include a host user account, as with the logical volume system of Wang, in order to provide administrative control to the logical volume, as taught by Wang.

46. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher *et al.*, Duso *et al.*, and Wang.

47. With respect to claim 6, Fisher *et al.* disclose all other limitations of the parent claim, as discussed above, but does not specifically disclose at least one of the users is an account of a host computer. Wang teaches a database administrator account for the logical volumes in column 7, lines 20+.

48. It would have been obvious to one of ordinary skill in the art, having the teachings of Fisher *et al.*, Duso *et al.*, and Wang. before him at the time the invention was made, to modify the logical volume system taught by Fisher *et al.* and Duso *et al.*, to include a host user account, as with the logical volume system of Wang, in order to provide administrative control to the logical volume, as taught by Wang.

Response to Arguments

49. Applicant's arguments filed 11/14/05 have been fully considered but they are not persuasive.

50. With regard to the USC 112 rejections, adequate support was found for multiple users simultaneously in page 15, lines 10-26. As such, the USC 112 rejections have been withdrawn.

51. In the first interview request, the Applicant alleged that the mount/non-mount status of Fisher does not teach information identifying a user. The Examiner responded that it is the owner information in Fisher that is used to read upon the claimed user information. This was made clear in paragraph 27 of the Final Action of 4/8/04 and again in paragraph 2 of the most recent Advisory Action of 8/25/05.

52. In response to the that, the Applicant then asked how the owner information of Fisher teaches the claimed in use status. Examiner pointed out that the in use status was taught by Fisher's mount/non-mount status. This was made clear as far back as the original Non-Final Action of 12/12/03, and was once again repeated in the same paragraph 2 of the most recent Advisory Action of 8/25/05.

53. Applicants' current argument appears to be that the owner information of Fisher cannot teach both the claimed user and in use status. Again from paragraph 2 of the most recent Advisory Action of 8/25/05, the Examiner stated that the "Examiner is interpreting the entirety of the information from these databases as the claimed identifying information." The database of Fisher is "information" identifying each user, and a portion of that database identifies if the volume is in use (mounted). There is no language in the claims limiting the identifying "information" to be only a particular number of bits, or a subset of some whole.

Conclusion

54. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew D. Anderson whose telephone number is (571) 272-4177. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew M. Kim can be reached on (571) 272-4182. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Matthew D. Anderson
Primary Examiner
Art Unit 2186